Bloom's Taxonomy: Reforming Pedagogy Through Assessment

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Abstract

The study analyses the scope and role of Bloom's Taxonomy (1956) in reforming teaching-learning practices in the classroom by employing a systematic balance of questions from both the lower and higher domains of learning in the summative assessment. Thus, this study analyses the annual question papers designed by the Boards of Intermediate and Secondary Education (BISE) Karachi, Hyderabad, Sukkur, and Mirpurkhas for the subject of English grade XII from the year 2014 to 2018. It employs Bloom's Taxonomy to analyze and categorize each item included in these annual question papers to ascertain the higher and lower domains of learning. At Sindh province level, it has been found that 74% of questions refer to the lower domains whereas only 26% are used for higher domains. Given the formative assessment practices, teachers and students remain focused only on the lower domains, but by altering the course, the pedagogical practices and teaching-learning process in Sindh province can remarkably be reformed and transformed from sheer memorization and rote-learning to critical thinking, solution-making, knowledge-building process, and analytical skills.

Keywords: assessment, BISE, bloom's taxonomy, education psychology, examination, teaching pedagogy

Introduction

Many educationists such as Augustine, Aquinas, Descartes, Locke, Hume, Rousseau, Kant, Hegel, Mill, John Dewey, R.S. Peters added their share to ascertain and establish the aims and objectives of education. Whitehead (1967) argues that the "basic aim of education is produce individuals embodying cultural values and possessing in-depth knowledge in a specific field or direction. For this, it is imperative to eliminate 'inert ideas' which become redundant and obsolete with the passage of time" (p.1). D. H. Lawrence establishes that education aims 'to lead out an individual'; Rousseau believes education brings a man 'in accord with nature; for R. M. Hutchins education is a source of 'cultivation of the intellect'; A.S. Neill deems it as a means to 'make people happier, more secure, less neurotic, less prejudiced'; for Locke education aims at teaching 'virtue', controlling 'desires' and following 'reason' (as cited in Harris, 2002, p.1). Dogan (2020) establishes that education should raise an individual "having critical thinking, ethical, national and moral values and love of country and nation" (p. 244). Thus, the objectives of education have gradually evolved from a simple reading, writing, doing mathematical calculations, and operating the computer to higher domains like analyzing, evaluating, and creating. Education aims at nurturing individuals with reasoning faculty, critical skills, and problem-solving approaches. It predominantly focuses on the behavioral transformation of individuals to make them reflective in consideration and inquisitive in exploration. They should not be passive followers of superstitious traditions, illogical beliefs, and unscientific practices, but they should have logical grounds, rationalized convictions, and erudite considerations for the acceptance or rejection of any truth or fact in their life. To produce moderate, progressive, enlightened, scientific, and visionary individuals, there ought to be an ideal pursuit of education. It may impart skills of arguing with proof, discussing with politeness, and disagreeing with grace.

The education system of the Indian subcontinent has evolved through different phases with diversified crossroads. Before the 1947 partition, the education system of the Indian subcontinent was based on Maktabs, Madrasas, and Dharamshalas with Persian and Sanskrit as mediums of instruction, in which Urdu was also included in 1829 (Chandio et al., 2016). However, based on European scientific knowledge and literature, the British rulers introduced the western education system with English as a medium of instruction (Chandio et al., 2016) where a comprehensive objective and subjective examination was conducted at

the end of the two-year teaching process. This promoted memorization and rote-learning. Later, an annual examination system was introduced, which is prevalent in all private and public sector schools and colleges of Pakistan except some universities or Higher Education Institutes (HEIs), which follow the semester examination system as per the instructions of HEC Pakistan. Nevertheless, the system of rote learning and memorization never changed.

The public and private sector schools of Sindh province conduct annual exam up to grade VIII at the local level, whereas Boards of Intermediate and Secondary Education (BISE) conduct annual exams for Secondary School Certificate (SSC) i.e. matriculation or grade IX and X and Higher Secondary School Certificate (HSC) i.e. intermediate or grade XI and XII.

Generally, formal academic activities commence with teaching-learning process and end with the summative assessment. The teaching process aims at the construction of knowledge, meaning-making skills, reflective thinking faculties, meta-cognition function, and enhancement of learning and understanding. Whereas the assessment process aids the teaching-learning process, provides feedback, enhances the understanding, promotes intensive higher skills among learners, guides in promoting students to higher grades, and awarding degrees to them (Rehmani, 2003). Assessment is of two types: formative and summative. The former, being continuous, provides continual feedback to both teacher and learner, whereas the latter is for grading, promoting students to higher classes, and awarding them degrees. In short, the summative assessment is 'of' learning, whereas the formative assessment is 'for' the learning.

This study employs Bloom's Taxonomy (1956) to analyze five-year question papers designed to assess the subject of English at grade XII by Boards of Intermediate and Secondary Education (BISE) Karachi, Hyderabad, Sukkur, and Mirpurkhas of Sindh province, Pakistan. The paper analyses every single item used in these annual question papers to ascertain whether they probe the lower domains of learning i.e. 'remembering' 'understanding' and 'applying' which promote rote-learning, memorization or they transcend to the higher domains such as analyzing, evaluating and creating, which induce critical thinking, problem-solving skills and proper application of the learned concepts.

Research Questions

1. What are normative summative assessment practices for the subject of English at grade XII in the Boards of Intermediate Secondary Education of Sindh province?

2. What domains of Bloom's Taxonomy do the normative summative assessment probe in XII grade English paper given by the Boards of Intermediate Secondary Education of Sindh province?

Literature Review

Blooms Taxonomy: As a Theoretical Framework

Holistically, Bloom's Taxonomy (1956) consists of three domains i.e. cognitive, affective, and psychomotor. The cognitive domain deals with the intellectual development of learners, the affective domain focuses on emotional stability, whereas the psychomotor relates to physical skills. The cognitive domain is further divided into six stages which got changed from the noun to verb nomenclature: remembering, understanding, applying, analyzing, evaluating, and creating (Bloom, 1956; Anderson et al. 2001). Bloom's Taxonomy propounds that both teaching and assessment processes should transcend from the lower domains to higher domains of learning. Remembering, understanding, and applying belong to the lower domains, whereas analyzing, evaluating, and creating belong to the higher domains. These domains are better encapsulated in the following table:

Table 1

Skills Related to Higher Level Thinking

Skill	Sample Prompts	Purpose	Level
Creating	Design, construct, plan	Combine elements into a new pattern	Higher
Evaluating	Check, review, conclude, explain	Decide according to a set of criteria	Higher
Analyzing	Compare, organize, deconstruct	Examine information	Higher
Applying	Implement, carry out, use, apply, show, solve	Apply knowledge	Lower
Understanding	Describe, estimate, predict	Understand meaning	Lower
Remembering	Recognize, list, identify	Memorize and recall facts	Lower

Note: Adopted from The Impact of Assessment on Students Learning by Jimaa, 2011, p.719

Assessments in Education

Omar (2010) defines education as a "process by which the society deliberately transmits its accumulated knowledge, skills and values from one generation to another" (p.7). Yousaf and Hashim (2012) cited John Dewey (2009) defining education "as reorganization, reorientation, and reconstruction of knowledge, values, attitude, skill and action" (p. 55). But the referred changes can only be implemented once there is a systematic, scientific, continuous, and proper assessment system. Assessment has several objectives: it helps in gauging performance (Broadfoot et al., 2002), determining the quality of learning and knowledge of learners, developing material, placing learners, improving teaching pedagogical approaches, providing feedback on a program, improving teaching-learning process, filling the existing gaps, awarding degrees or certificates, providing continuous and timely guidance to learners and establishing whether the objectives of a teaching program are achieved or not (Burbles, 2004; Campbell et al., 1996). Jimaa (2011) adds "assessment has a deep impact on what and how students study, how much they study and how effectively they study" (p. 719).

World Bank (2010) essentializes the improvement in quality education and assurance of a process that can effectively measure learning outcome that "caters to the fundamental requisition of learning and facilitates human experience, lifestyle, and understanding" (p. 98). This completely depends on the cyclical evaluation process. However, while evaluating it is not adequate to only focus on how to assess, but the profound trait which revolutionizes the education system is what to assess. Aggarwal (1997) adds that the true form of education ensures learning outcomes, but both education and learning outcomes can be reformed and revolutionized through evaluation and assessment processes. Thus, it is pertinent to add that the nature of questions asked in the examination impacts teaching practices and learning outcomes in the classroom.

Henning (2012) points out twenty glaring shortcomings in the traditional normative assessment. He categorizes them under four domains: examination features, item characteristics, test validity, and scoring and administration issues.

Examination Features

If tests are short or lengthy, tough or easy, redundant or unreliable, invalid or with negative backwash, they fall into the domain of examination features.

Item Characteristics

The item domain emphasizes that a standard test should not include questions based on tricks, obsolete semantics, divergent or convergent cues. If the options given for answers are very open and easily comprehensible, they are termed as divergence cues; in contrast, if the options have great similarity and closeness, it is called convergence cues. Besides, the item domain also adds that there should not be a small number of options for a multiple-choice question or false or true question, because it enhances the possibility to surmise and guess the right option.

Test Validity

This refers to the validity of a test that it purports to assess.

Administration Issues

This domain comprises the conduct of a test, proper check on cheating and use of unfair means, provision of same facilities to all test-takers, the fixed yardstick for all assessors or examiners, proper scoring, and fair assessment.

Etemadzadeh et al. (2013) maintain that there is a significant correlation between a question and "learning outcomes, achievement, retention, and thinking skills" (p. 1025). Questions help in defining a task and expressing problems and issues. If a question is posed effectively, it transforms students' thoughts and ideas (Elder & Paul, 2002) and enables students to elicit deeper processing of information (Strother, 1989). Bloom's Taxonomy suggests that students should be exposed from closed to open-ended questions to lead them from lower to higher orders of learning. The close-ended questions help in extracting factual understanding, whereas the open-ended questions cultivate higher-order thinking, critical and analytical skills. It has been established that students can be led from the simple to complex orders of knowledge and from the lower order of fact retention and recalling to the higher order of analysis, evaluation, and creativity (Black & Harrison, 2001; Morgan & Saxton 1994; Muijs & Reynolds, 2001; Springer, 2020; Wragg & Brown, 2001). Zaidi et al. (2018) establish that MCQs can effectively be used for developing

higher skills among learners. Shirazi and Heidari (2019) maintain that empowering teachers to design questions targeting higher skills and invoking problem-solving approach make students critical and analytical.

Thus, assessment patterns can be used to reform and revolutionize the teaching-learning process in the classroom. It can influence both teacher and student through the nature of questions asked in the examination (Black, 1998; Gipps, 1994 & 1996; Greaney & Hasan 1998; Kellaghan & Greaney 2001; Mirza, 1999). If most of the questions included in papers are close-ended and test the memory of learners, then the teaching focus of the faculty and learning priorities of students would also get aligned accordingly. As a result, a sham and pseudo-teaching-learning and examination process would emerge to promote rote-learning and memorization whereas the critical, analytical, evaluative, creative, and problem-solving approaches would remain halted.

Methodology

This study presents the analysis of the secondary data in the form of annual question papers designed by Boards of Intermediate and Secondary Education Karachi, Hyderabad, Sukkur, and Mirpurkhas to assess the subject of English grade XII. These boards are representative of each part of Sindh province. The study includes the question papers of English, grade XII from 2014 to 2018 which were collected, analyzed, and categorized from the vantage point of the lower and higher domains of Bloom's Taxonomy. Chandio et al. (2016) have already analyzed the question papers designed by the above boards at the secondary level, this study, therefore, fills the existing research gap by undertaking the higher secondary level for analysis. The question papers consist of three sections: MCQs, short questions, and detailed questions. The data from each section have been presented in both graphic and tabular forms. The inter-and-intra comparative analysis of various domains along with qualitative document analysis has been made for both specific and holistic evaluation of the formative assessment practices and in-depth understating of the phenomenon. The study investigates if these boards only probe the lower domains of learning, or they include the higher domains of learning as well. Besides, it also presents the proportion of questions referring to the lower and higher domains of learning. It enquires whether the prevailing normative assessment patterns will cultivate critical thinking and problem-solving approaches among students and how the teaching-learning practices of faculty and learning

priorities of students can be altered and reformed in the light of Blooms' Taxonomy.

Findings

The findings are presented in both table and graph forms; the former shows the number of questions from each domain whereas the latter shows the percentage of each domain. The findings are presented in the order of MCQs, short questions, and detailed questions.
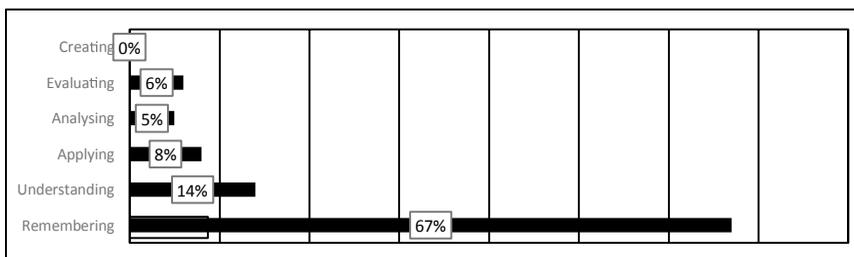
Karachi Board Five-Year MCQs

Table 2

Showing the Number of Questions from Each Domain Used by Karachi Board in MCQs

Year	Remembering	Understanding	Applying	Analyzing	Evaluating	Creating	Total Questions
2014	14	-	3	-	3	-	20
2015	14	3	1	-	2	-	20
2016	14	4	1	-	1	-	20
2017	8	7	1	4	-	-	20
2018	17	-	2	1	-	-	20
Total	67	14	8	5	6	00	100

Figure 1

Showing the Percentage of Each Domain Used by Karachi Board in MCQs

In the MCQs section of Karachi Board, the lowest domain of 'remembering is highly focused, and almost 86% remains reserved for the lower domains of learning such as 'remembering', 'understanding', and 'applying', whereas the higher domains of learning remain quantitatively less focused.
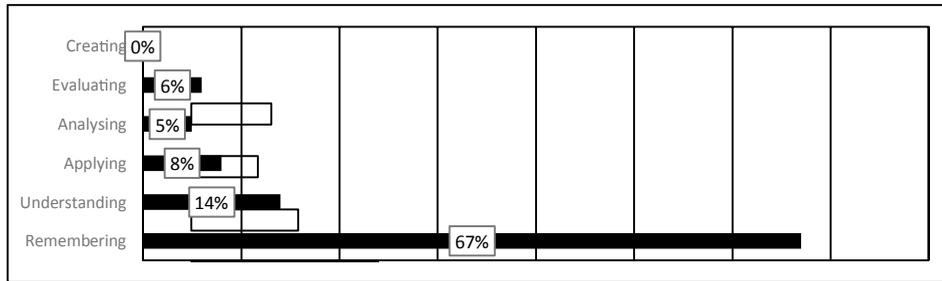
Hyderabad Board Five-Year MCQs

Table 3

Showing the Number of Questions from Each Domain Used by Hyderabad Board in MCQs

Year	Remembering	Understanding	Applying	Analyzing	Evaluating	Creating	Total Questions
2014	17	3	-	-	-	-	20
2015	18	2	-	-	-	-	20
2016	14	1	5	-	-	-	20
2017	12	2	6	-	-	-	20
2018	11	5	3	1	-	-	20
Total	72	13	14	01	00	00	100

Figure 2

Showing the Percentage of Each Domain Used by Hyderabad Board in MCQs

Like Karachi Board, the lowest domain of learning i.e. 'remembering remains highly focused, and almost 97% remains reserved for the lower domains of learning such as 'remembering', 'understanding', and 'applying', whereas the higher domains remain altogether overlooked.
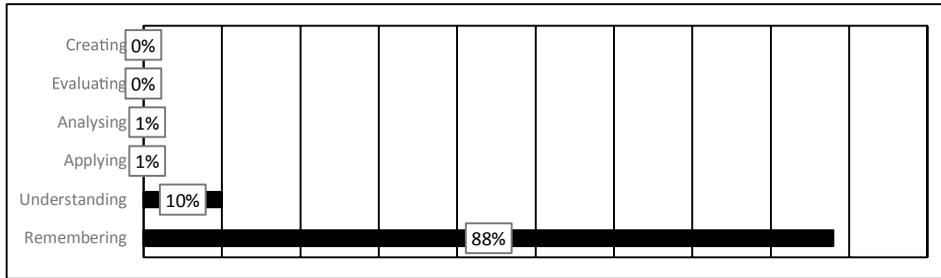
Sukkur Board Five-Year MCQs

Table 4

Showing the Number of Questions from Each Domain Used by Sukkur Board in MCQs

Year	Remembering	Understanding	Applying	Analyzing	Evaluating	Creating	Total Questions
2014	18	2	-	-	-	-	20
2015	17	2	1	-	-	-	20
2016	19	1	-	-	-	-	20
2017	17	3	-	-	-	-	20
2018	17	2	-	1	-	-	20
Total	88	10	01	01	00	00	100

Figure 3

Showing the Percentage of Each Domain Used by Sukkur Board in MCQs

Sukkur Board is drastically engrossed with the domains which invoke rote-learning and memorization; especially, indulgence in the domain of 'remembering' is alarming and the highest one.
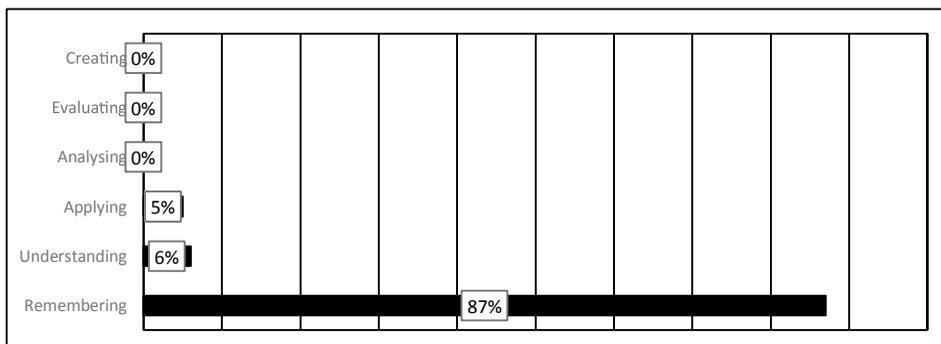
Mirpurkhas Board Five-Year MCQs

Table 5

Showing the Number of Questions from Each Domain Used by Mirpurkhas Board in MCQs

Year	Remembering	Understanding	Applying	Analyzing	Evaluating	Creating	Total Questions
2014	16	3	-	-	-	-	19
2015	17	2	-	-	-	-	19
2016	17	1	2	-	-	-	20
2017	20	-	-	-	-	-	20
2018	17		3	-	-	-	20
Total	87	06	05	00	00	00	98

Figure 4

Showing the Percentage of Each Domain Used by Mirpurkhas Board in MCQs

Mirpurkhas Board is the second-highest in the domain of 'remembering' and completely ignorant of the higher domains of learning.
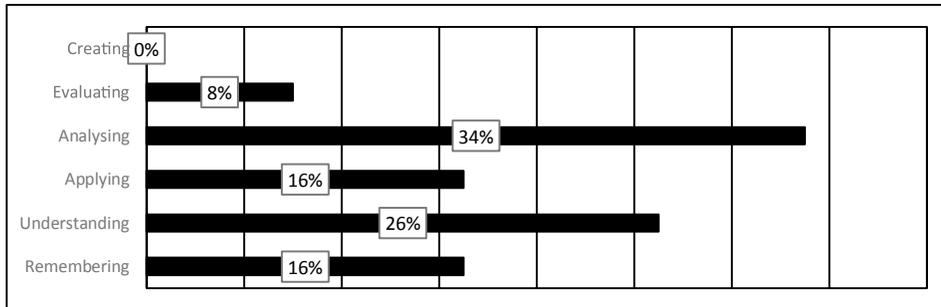
Karachi Board Five-Year Short Questions

Table 6

Showing the Number of Questions from Each Domain Used by Karachi Board in Short Questions

Year	Remembering	Understanding	Applying	Analyzing	Evaluating	Creating	Total Questions
2014	2	3	2	8	2	-	17
2015	3	6	2	4	-	-	15
2016	3	1	2	7	2	-	15
2017	2	4	4	4	2	-	16
2018	3	7	3	4	-	-	17
Total	13	21	13	27	6	00	80

Figure 5

Showing the Percentage of Each Domain Used by Karachi Board in Short Questions

Concerning short questions, Karachi Board considerably adds questions from the domain of 'analyzing' and 'evaluating', yet the domain of 'creating' remains ignored.
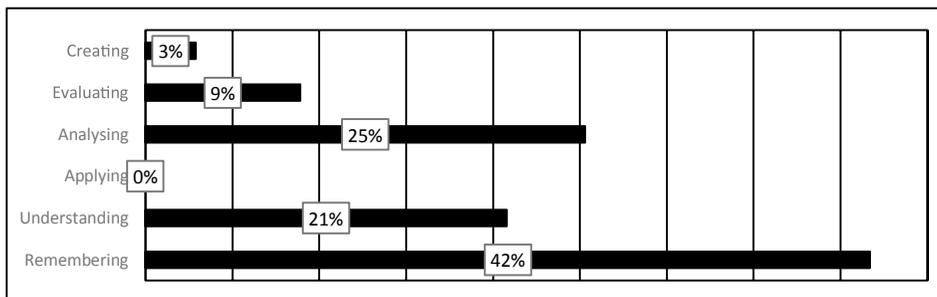
Hyderabad Board Five-Year Short Questions

Table 7

Showing the Number of Questions from Each Domain Used by Hyderabad Board in Short Questions

Year	Remembering	Understanding	Applying	Analyzing	Evaluating	Creating	Total Questions
2014	8	2	-	3	-	-	13
2015	6	4	-	3	-	-	13
2016	3	2	-	3	3	2	13
2017	5	4	-	3	1	-	13
2018	6	2	-	5	2	-	15
Total	28	14	00	17	6	2	67

Figure 6

Showing the Percentage of Each Domain Used by Hyderabad Board in Short Questions

Hyderabad Board has significantly added the domain of 'analyzing' and somehow 'evaluating' and 'creating', yet the questions belonging to the lower domains consist of above 62% percent, which means the development of critical thinking and academic uplift among learners.
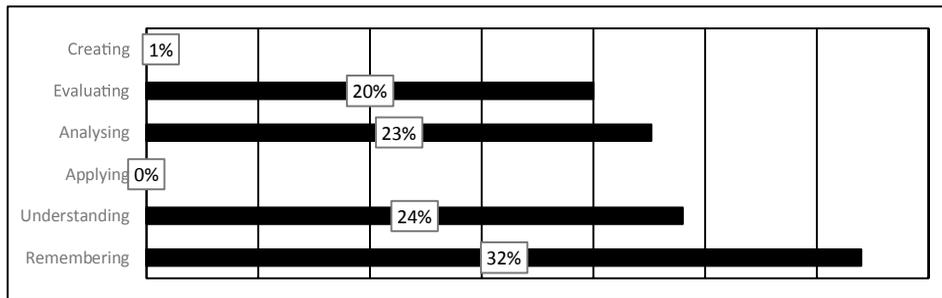
Sukkur Board Five-Year Short Questions

Table 8

Showing the Number of Questions from Each Domain Used by Sukkur Board in Short Questions

Year	Remembering	Understanding	Applying	Analyzing	Evaluating	Creating	Total Questions
2014	8	3	-	3	1	-	15
2015	8	3	-	1	3	-	15
2016	4	4	-	4	3	-	15
2017	3	4	-	2	6	-	15
2018	1	4	-	7	2	1	15
Total	24	18	00	17	15	01	75

Figure 7

Showing the Percentage of Each Domain Used by Sukkur Board in Short Questions

It would have been more effective if Sukkur Board had added to the domain of 'creating' rather than of 'remembering'.
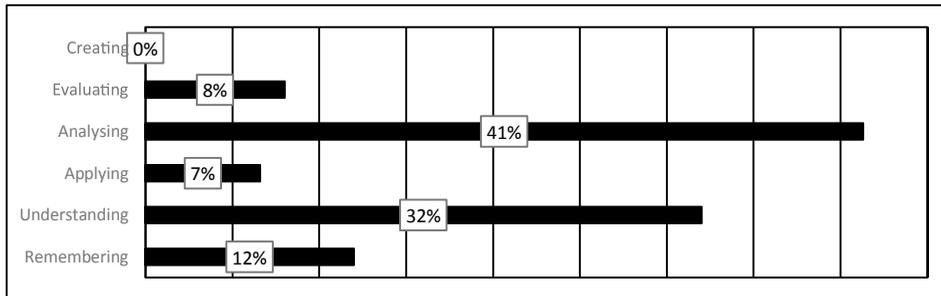
Mirpurkhas Board Five-Year Short Questions

Table 9

Showing the Number of Questions from Each Domain Used by Mirpurkhas Board in Short Questions

Year	Remembering	Understanding	Applying	Analyzing	Evaluating	Creating	Total Questions
2014	4	5	-	4	-	-	13
2015	2	7	-	6	-	-	15
2016	-	2	5	9	2	-	18
2017	1	4	-	6	3	-	14
2018	2	6	-	6	1	-	15
Total	09	24	05	31	06	00	75

Figure 8

Showing the Percentage of Each Domain Used by Mirpurkhas Board in Short Questions

Mirpurkhas Board has significantly reduced the domain of 'remembering', yet the higher domains especially 'creating' remain less focused.
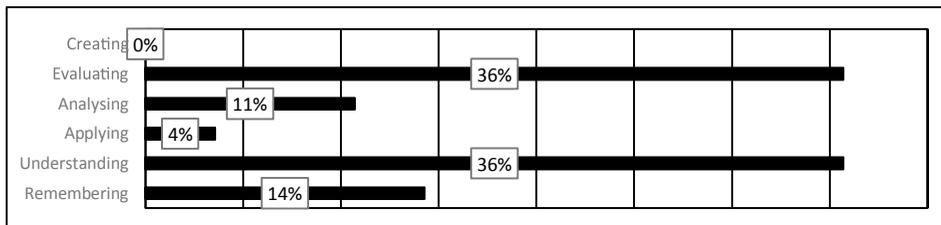
Karachi Board Five-Year Long Questions

Table 10

Showing the Number of Questions from Each Domain Used by Karachi Board in Long Questions

Year	Remembering	Understanding	Applying	Analyzing	Evaluating	Creating	Total Questions
2014	-	-	-	1	2	2	5
2015	-	2	-	-	-	2	4
2016	-	2	-	-	1	2	5
2017	-	-	5	-	-	2	7
2018	-	-	5	-	-	2	7
Total	00	4	10	1	3	10	28

Figure 9

Showing the Percentage of Each Domain Used by Karachi Board in Long Questions

For the long questions, Karachi Board is adequately inclusive of the domain of 'creating', yet the lower domains especially 'applying' remain quantitatively high. It would have been academically profound if the excessive part of the referred portion had been employed for the domains of 'analyzing' and 'evaluating'.
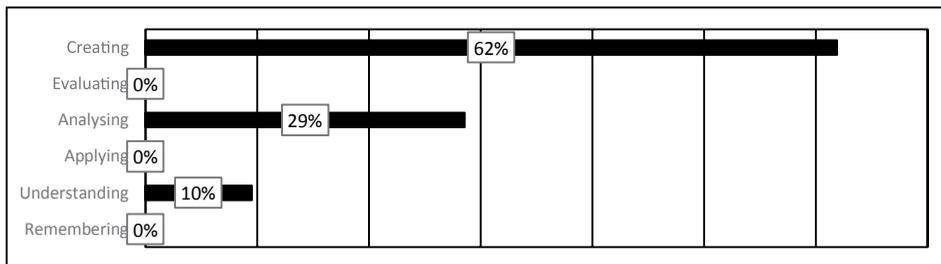
Hyderabad Board Five-Year Long Questions

Table 11

Showing the Number of Questions from Each Domain Used by Hyderabad Board in Long Questions

Year	Remembering	Understanding	Applying	Analyzing	Evaluating	Creating	Total Questions
2014	-	1	-	1	-	3	5
2015	-	1	-	1	-	2	4
2016	-	-	-	1	-	3	4
2017	-	-	-	1	-	2	3
2018	-	-	-	2	-	3	5
Total	00	2	00	6	00	13	21

Figure 10

Showing the Percentage of Each Domain Used by Hyderabad Board in Long Questions

Hyderabad Board focuses only one category of higher domain i.e. 'creating', whereas 'analysing' and 'evaluating' remain overlooked.
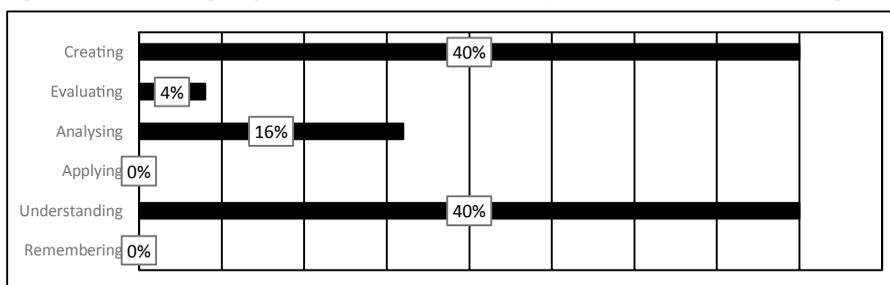
Sukkur Board Five-Year Long Questions

Table 12

Showing the Number of Questions from Each Domain Used by Sukkur Board in Long Questions

Year	Remembering	Understanding	Applying	Analyzing	Evaluating	Creating	Total Questions
2014	-	2	-	1	-	2	5
2015	-	2	-	1	-	2	5
2016	-	2	-	1	-	2	5
2017	-	2	-	1	-	2	5
2018	-	2	-	-	1	2	5
Total	00	10	00	04	01	10	25

Figure 11

Showing the Percentage of Each Domain Used by Sukkur Board in Long Questions

Sukkur Board is found more tilted towards the lower domain of 'understanding', which would have been more effective and balanced if such portion had been reserved for the higher domain of 'evaluating'.
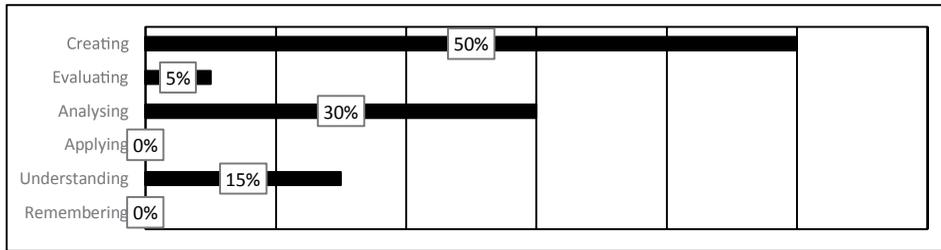
Mirpurkhas Board Five-Year Long Questions

Table 13

Showing the Number of Questions from Each Domain Used by Mirpurkhas Board in Long Questions

Year	Remembering	Understanding	Applying	Analyzing	Evaluating	Creating	Total Questions
2014	-	2	-	1	1	1	5
2015	-	1	-	1	-	3	5
2016	-	-	-	2	-	2	4
2017	-	-	-	1	-	2	3
2018	-	-	-	1	-	2	3
Total	00	03	00	06	01	10	20

Figure 12

Showing the Percentage of Each Domain Used by Mirpurkhas Board in Long Questions

Contrary to its MCQs section, Mirpurkhas Board is found positively focused on the higher domains of learning in the section containing long questions, yet it needs fine balance and gradual transcendence from the lower to the higher domains of learning.

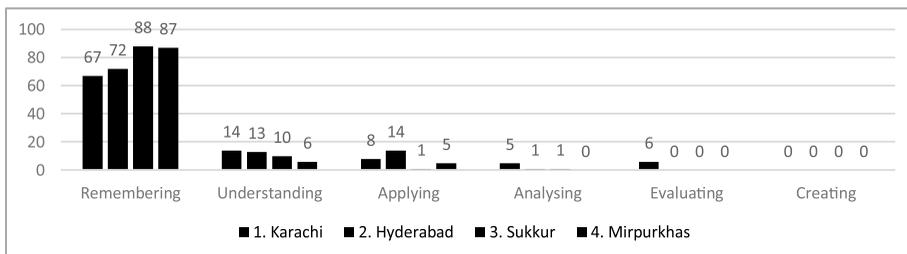## Comparative Analysis of Five Years' MCQs by All Boards

Table 14

Showing Comparative Analysis of Five Years' MCQs by All Boards

Domains	Karachi Board	Hyderabad Board	Sukkur Board	Mirpurkhas Board	Total Questions
Creating	00	00	00	00	00
Evaluating	06	00	00	00	06
Analysing	05	01	01	00	07
Applying	08	14	01	05	28
Understanding	14	13	10	06	43
Remembering	67	72	88	87	314
Total	100	100	100	98	398

Figure 13

Showing Comparative Analysis of Five Years' MCQs by Karachi, Hyderabad, Sukkur, and Mirpurkhas Boards Respectively

All boards of Sindh province are deplorably engrossed in the domain of 'remembering' so far as the MCQs section is concerned. It is likely to promote rote-learning, cramming, and memorization. Three are various effective means to make analytical, evaluative, and creative MCQs, but it needs proper understanding and effective training for the question paper setters.

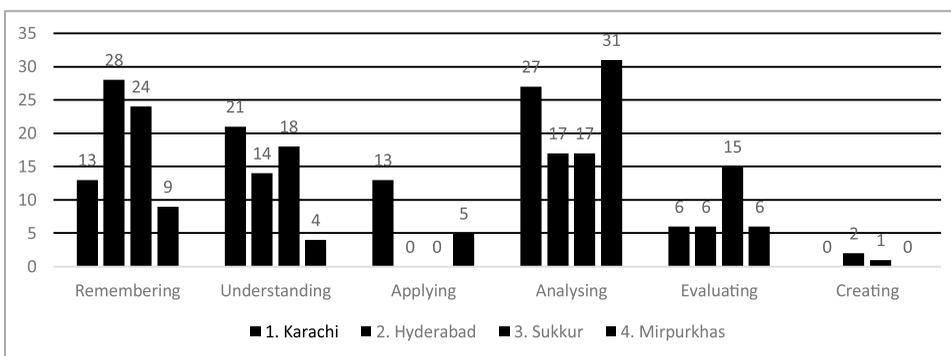## Comparative Analysis of Five Years' Short Questions by All Boards

Table 15
Showing Comparative Analysis of Five Years' Short Questions by All Boards

Domains	Karachi Board	Hyderabad Board	Sukkur Board	Mirpurkhas Board	Total Questions
Creating	00	02	01	00	03
Evaluating	06	06	15	06	33
Analysing	27	17	17	31	92
Applying	13	00	00	05	18
Understanding	21	14	18	24	77
Remembering	13	28	24	09	74
Total	80	67	75	75	297

Figure 14
Showing Comparative Analysis of Five Years' Short Questions by Karachi, Hyderabad, Sukkur, and Mirpurkhas Boards Respectively

There is a reasonable portion dedicated to 'analyzing' and 'evaluating', but 'creating' remains badly overlooked in the section of short questions. Besides, 'applying', which is from the lower domain yet academically very crucial, also remains ignored.

**Comparative Analysis of Five Years' Long Questions by All Boards**

Table 16

Showing Comparative Analysis of Five Years' Long Questions by All Boards

Domains	Karachi Board	Hyderabad Board	Sukkur Board	Mirpurkhas Board	Total Questions
Creating	10	13	10	10	43
Evaluating	03	00	01	01	05
Analysing	01	06	04	06	17
Applying	10	00	00	00	10
Understanding	04	02	10	03	19
Remembering	00	00	00	00	00
Total	28	21	25	20	94

Figure 15

Showing Comparative Analysis of Five Years' Long Questions by Karachi, Hyderabad, Sukkur, and Mirpurkhas Boards Respectively
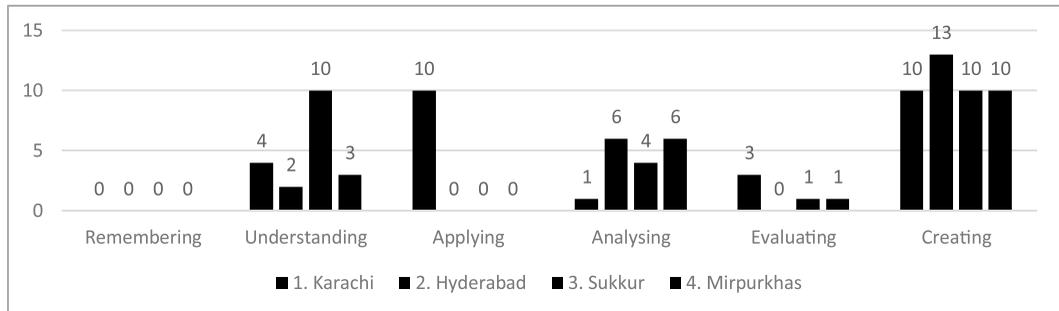
All boards are found considerably focused on the higher domains especially 'analyzing' and 'creating' in the section of detailed questions, but there is an inclination towards the lower domains. For instance, Sukkur Board is found focused on 'understanding' whereas Karachi Board is additionally involved in 'applying'.

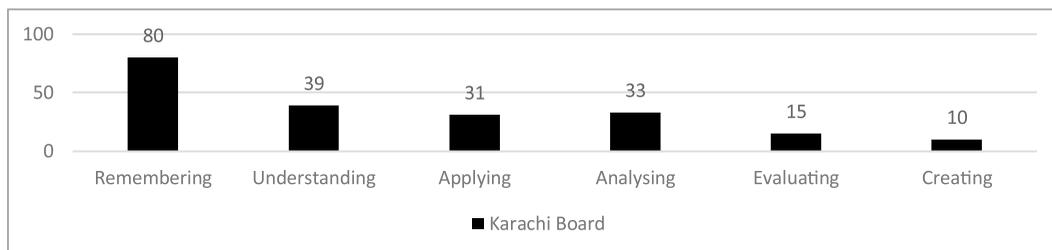**Cumulative Graph of MCQs, Short and Long Questions of Karachi Board**

Table 17

Showing Cumulative Graph of MCQs, Short and Long Questions of Karachi Board

Domains	Remembering	Understanding	Applying	Analyzing	Evaluating	Creating
MCQs	67	14	08	05	06	00
Short Questions	13	21	13	27	06	00
Long Questions	00	04	10	01	03	10
Total	80	39	31	33	15	10

Figure 16

Showing Cumulative Graph of MCQs, Short and Long Questions of Karachi Board

The descending order from the lower to the higher domains of learning is deplorable. It would have been more effective if the order had been in the reversed position increasing from the lower to the higher domains.

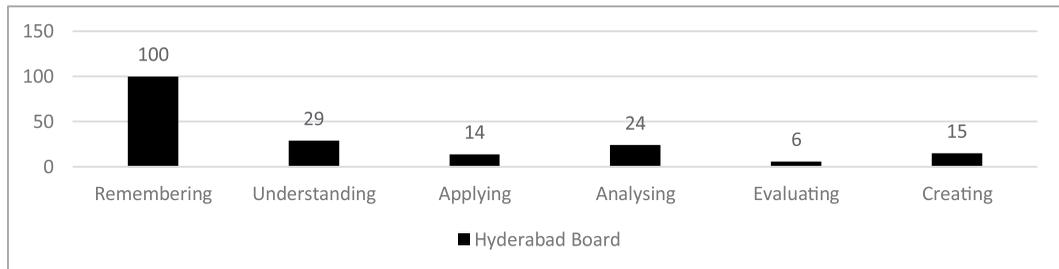**Cumulative Graph of MCQs, Short and Long Questions of Hyderabad Board**

Table 18

Showing Cumulative Graph of MCQs, Short and Long Questions of Hyderabad Board

Domains	Remembering	Understanding	Applying	Analyzing	Evaluating	Creating
MCQs	72	13	14	01	00	00
Short Questions	28	14	00	17	06	02
Long Questions	00	02	00	06	00	13
Total	100	29	14	24	06	15

Figure 17

Showing Cumulative Graph of MCQs, Short and Long Questions of Hyderabad Board

Hyderabad Board

Like Karachi Board, Hyderabad Board is also found more inclined towards the lower domains especially 'remembering'.

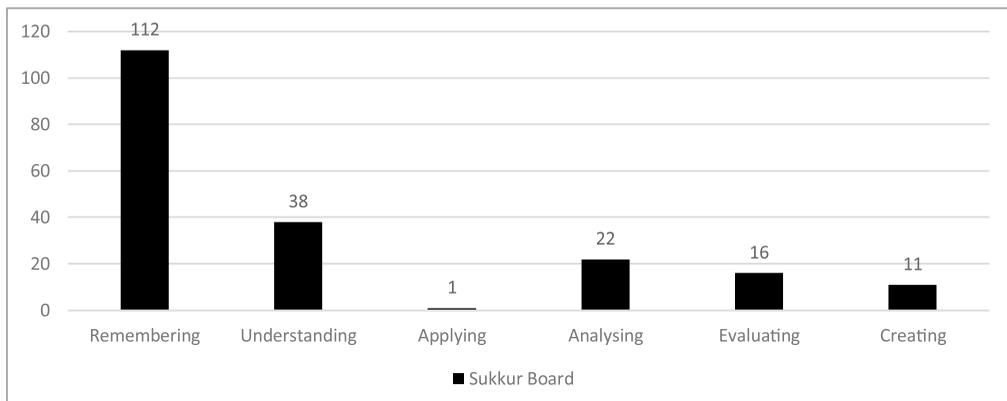## Cumulative Graph of MCQs, Short and Long Questions of Sukkur Board

Table 19

Showing Cumulative Graph of MCQs, Short and Long Questions of Sukkur Board

Domains	Remembering	Understanding	Applying	Analyzing	Evaluating	Creating
MCQs	88	10	01	01	00	00
Short Questions	24	18	00	17	15	01
Long Questions	00	10	00	04	01	10
Total	112	38	01	22	16	11

Figure 18

Showing Cumulative Graph of MCQs, Short and Long Questions of Sukkur Board

Sukkur Board

Cumulatively, Sukkur Board has included the highest number of questions from the domain of 'remembering'. Besides, the domain of applying has remained little focused during the five-year assessment period. If a domain remains overlooked for long, teachers and students also become oblivious of it; as a result, students grow with a permanent shortcoming, deficiency, or lacunae.

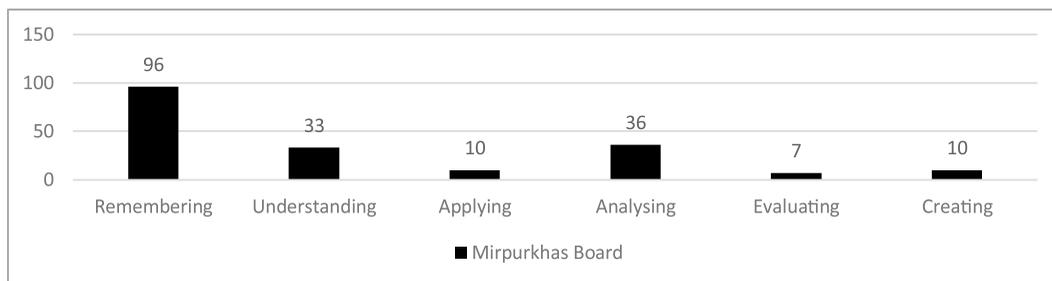**Cumulative Graph of MCQs, Short and Long Questions of Mirpurkhas Board**

Table 20
Showing Cumulative Graph of MCQs, Short and Long Questions of Mirpurkhas Board

Domains	Remembering	Understanding	Applying	Analyzing	Evaluating	Creating
MCQs	87	06	05	00	00	00
Short Questions	09	24	05	31	06	00
Long Questions	00	03	00	06	01	10
Total	96	33	10	37	07	10

Figure 19
Showing Cumulative Graph of MCQs, Short and Long Questions of Mirpurkhas Board

The case of Mirpurkhas Board is also similar to other boards, it also needs systematic and gradual inclusion of questions from the lower to the higher domains of learning.

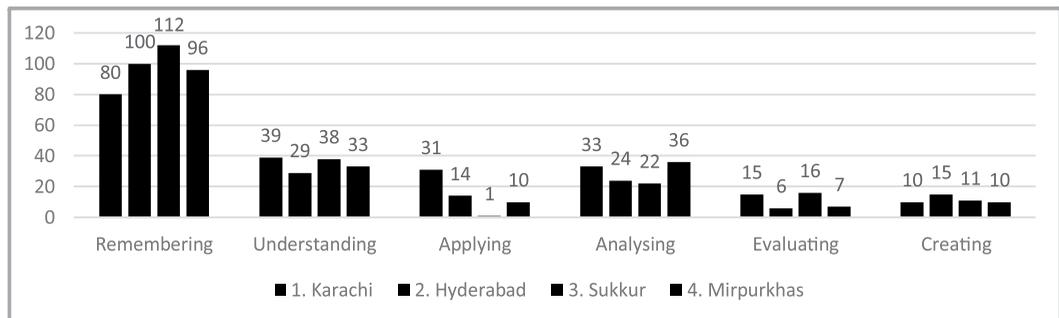## Cumulative Graph of MCQs, Short and Long Questions by All Boards

Table 21

Showing Cumulative Graph of MCQs, Short and Long Questions by All Boards

Domains	Karachi Board	Hyderabad Board	Sukkur Board	Mirpurkhas Board	Total Questions
Creating	10	15	11	10	46
Evaluating	15	06	16	07	44
Analysing	33	24	22	36	115
Applying	31	14	01	10	56
Understanding	39	29	38	33	139
Remembering	80	100	112	96	388

Figure 20

Showing Cumulative Graph of MCQs, Short and Long Questions by Karachi, Hyderabad, Sukkur, and Mirpurkhas Boards respectively

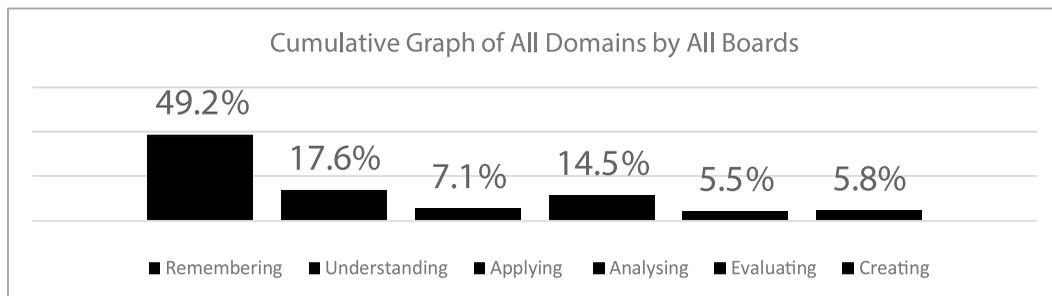## Cumulative Graph of All Domains by All Boards

Table 22

Showing Cumulative Graph of All Domains by All Boards

Domains	Karachi Board	Hyderabad Board	Sukkur Board	Mirpurkhas Board	Total Questions
Creating	10	15	11	10	46
Evaluating	15	06	16	07	44
Analysing	33	24	22	36	115
Applying	31	14	01	10	56
Understanding	39	29	38	33	139
Remembering	80	100	112	96	388

Figure 21

Showing Cumulative percentage of All Domains by All Boards

Cumulative Graph of All Domains by All Boards

49.2%

17.6%

7.1%

14.5%

5.5%

5.8%

■ Remembering   ■ Understanding   ■ Applying   ■ Analysing   ■ Evaluating   ■ Creating

This is the cumulative graph of all boards of Sindh province. It shows that about 74% percent is reserved for the lower domains of learning, whereas only 26% percent is used for the higher domains. It would have been more effective, if 'evaluating' and 'creating' had been focused instead of 'remembering' and 'understanding'.

Qualitative Document Analysis

MCQs

Henning (2012) points common twenty mistakes in the construction of a standard test. One among them is convergent cues, in which all given options for answers have great affinity and similitude hence they are formidable to discern and grasp. For instance, the options given in this question are very close: *A thing of passion/beauty/happiness/love is a joy forever* (BISE, Hyderabad, 2017). Though it is one of the famous lines by John Keats, yet if analyzed from the vantage point of context, syntax, semantics, or synthesis, all options sound appropriate and correct ones. Thus, the question only invokes the descriptive memory of the learner, but it does not investigate the critical, analytical, or evaluative skills of learners. The options with close affinity and possible syntactic, semantic, synthetic, and contextual correctness baffle and confuse learners. The job of an examiner should not be to terrify, horrify, confuse and baffle learners, but the objective ought to be the promotion of learning and critical skill development. In the same vein, options added in the following question bear contextual, semantic, and syntactic correctness.

> *That man needs neither towers,*
> *Nor armour for (defence/safety/protection/safe)* (BISE, Sukkur, 2014)

In addition to convergence cues, divergence cue is another common fallacy in the construction of a test. In convergence cues, the given options are so obvious or distinctive that they can easily be discerned without extensive employment of analytical or critical faculties. For instance, *'Albert Einstein likes/hates/criticizes/dislikes Truth, Goodness, and Beauty* (BISE, Sukkur 2018). This question offers a clear cue of liking some positive qualities and an individual with a little common sense can opt for the right choice.

Many questions in these papers only test the memory of students and do not invoke their critical and reasoning faculties, nor do they require teachers to reform their pedagogy with a special focus on analytical, critical, and evaluative skills rather than memory retention practices or rote learning. For instance, *'On which day coronation ceremony took place'* (BISE, Karachi, 2016); *'What is the name of Samson's wife*?' (BISE, Karachi, 2018); *'Who did kill Max Holf?'* (BISE, Hyderabad, 2015); *'Who is Fritz in love with?'* (BISE, Hyderabad, 2015); *'In which year Liaqat Ali visited America?'* (BISE, Sukkur, 2015); *'Who did shave the head of the hero?'* (BISE, Sukkur, 2015); *'What is the name of Robert's wife*?' (BISE, Mirpurkhas, 2014); *'In which year Lyrical Ballad was published?'*; *'How many hours panic lasted in Columbus City?'* ; *'Who did write the poem Lost Star?'* (BISE, Mirpurkhas, 2015); *'When was Liaqat Ali Khan assassinated?'*; *'When did Albert Einstein receive Nobel Prize?'*. Mirpurkhas Board uses twenty out of twenty close-ended questions in the exam of 2017 and seventeen out of twenty close-ended questions in 2018 respectively. Convergence cues, divergence cues, memory retention are common fallacies in the prevailing assessment practices.

However, some strong aspects need to be condoned, promoted, and encouraged. Some questions, given in these papers, are very much analytical and critical which cultivate critical skills among learners. For instance, the options given for the ideals that inspired Einstein to include i) truth, goodness, and education ii) education, success and goodness iii) truth, goodness and beauty iv) truth, beauty, and peace (BISE, Karachi, 2018). Though there are very close cues in the given options, yet they are very analytical and require great agility and rigorous reading practices on the part of students. These types of questions investigate the evaluative

skills of students: *"Albert Einstein was in favor of communism, dictatorship, democracy or anarchy"* (BISE, Sukkur, 2015). Besides, some questions included referring to the meaning and use of words that invoke semantic proficiency and its applicability. The increase and focus on the above-cited questions would positively add to the academic excellence, pedagogical practices, and learning approaches.

Short Questions

Many questions included in this section only assess the lower domains of learning with much focus on remembering and understanding. For instance, Karachi Board included five questions of narration and eleven of idiom in one paper (BISE, Karachi, 2016), it would have been more productive if a variety of grammatical questions had been included. However, in 2016 a transformative trend has been noticed when questions belonging to the phrasal verb, word pairs, textual meaning, and forms of the verb have been included in addition to narration and idioms (BISE, Karachi, 2017). But there occurs an anomaly of adding five questions from the area of narration in the section of detailed questions, whereas the questions of narration have already been included in the section of short question (BISE, Karachi, 2018). Assessing the same skill repetitively is non-productive, clumsy, and inappropriate. It shows the objectives of the assessment and their implementation are not clear. Neither rubrics nor the selected areas to be assessed are predetermined. The question papers are designed without prior parameters, rubrics, priorities, consideration, equilibrium, and rationale, and items included are merely based on chance.

However, some questions are analytical, productive, and invoke critical thinking among learners. For instance, '*Why does Bertrand Russel consider it useless to resist industrialization?*' (BISE, Hyderabad, 2018); '*Why did Princess Flavia prefer duty to love?*'. To cultivate decision-making skills among learners, it is necessary to include evaluative questions in the assessment process so that students make choices and decisions in the light of their argument, personal understanding, and academic knowledge. For instance, the questions of this sort enrich evaluative skills of learners: '*Briefly discuss whether the magistrate gives Jones a fair trial'* (BISE, Sukkur, 2016).

Mirpurkhas Board included questions relating to the application of grammar in 2016, which is academically positive, but the total number of short questions keeps varying. There were 13 questions in 2014; 15 questions in 2015;

18 questions in 2016; 14 questions in 2017 and 15 questions in 2018. It shows the lack of systematic objective orientated assessment practices.

Long Detailed Questions

This section requires detailed subjective answers on the part of learners, which offers them an opportunity to demonstrate their skills relating to the lower and higher domains of learning. Essay writing inculcates critical thinking, evaluative capability, and creative use of a language among learners. For instance, writing an essay on the following topics has the profound scope and academic value: '*Impact of Facebook on Students*' (BISE, Karachi, 2014), '*Destruction Caused by Terrorism and Necessity of Tolerance*' (BISE, Karachi, 2015), '*Energy Crises*' (BISE, Karachi, 2016), '*CPEC*' (BISE, Karachi, 2017), '*Importance of Smartphone*'. The essay on '*Importance of Chinese language*' shifts the public discourse from English to the Chinese language. After CPEC, the relationship between China and Pakistan has undergone a significant change, and its impact is far sure within the region and across the globe. Such questions would enhance students' horizon and vision and critical understanding. The topic of Terrorism is repeated in the consecutive years of 2015 and 2016 and PLS Matches have also been repeated in 2017 and 2018 (BISE, Karachi Board). This repetition leads students to indulge in bad practices of guess papers and selective studies.

The inclusion of an unseen paragraph for comprehension enquires and assesses real reading skills of learners. Generally, in teaching English, a teacher reads the new lesson and makes students listen to it passively then the students re-read the same lesson. This practice does not make students independent readers; thus, the comprehension of an unknown passage helps to evaluate students in real context and situation, and the creative use of the language helps to assess the exact capability of learners.

A lack of consistency in the number of questions has been found in the detailed section. Hyderabad Board added five detailed questions in 2014, which got reduced to four in 2015 and 2016, and the number was further reduced to three in 2017; however, in 2018 again the number is raised to five questions. In the same vein, Mirpurkhas Board included five detailed questions in 2016, four in 2017, and reduced them to three in 2018. Besides, Mirpurkhas Board positively included essay writing, precis writing, and comprehension in 2015 but discontinued them

in the following years without any reason. This deviation looks unscientific and problematic. There should be consistency and each item included should have clear rubrics and measurable objectives and goals. However, inclusion or exclusion without calculated and desired objectives does not cater value addition to the academic excellence and uplift.

Discussion

Teaching and designing a valid, reliable, transparent, error-free, comprehensive test needs proper training, but most of the training programs in Pakistan have remained non-productive, ineffective, and useless (Aslam, et al. 2010; Behlol & Anwer, 2011; Shamim, 2008). Besides, the pre-service courses are neither updated nor objective-oriented (Siddiqui, 2010). Several studies have highlighted the ineffectiveness, shortcomings, and grey areas in the assessment system of Pakistan. It lacks items probing critical thinking and analytical skills; contents asked and enquired are either superficial or devoid of depth and breadth (Bhatti, 1987; Chandio et al., 2016; Greaney & Hasan, 1998; Mirza 1999; Warwick & Reimers, 1995). Repetition of the same questions hinders in-depth learning practices and students resort to short-cuts and quick fixes as "There are model papers or guess paper guides available in the market with readymade answers based on past five-year papers" (Rehmani, 2003, p. 4).

To curb the above-mentioned inappropriate practices in exams and memory-retention endeavors during the teaching-learning process, it is indispensable to employ open-ended analytical and critical questions to reform academic avenues. This will transform academic pursuit from "traditional instructional theory and building block teaching practices to the extensive pedagogical approaches based on meaning-making and knowledge construction," (Rehmani, 2003, p. 6). As a result, learners will be able to apply the knowledge acquired creatively in new contexts. Harlen and James (1997) establish "Real or deep learning only takes place when it enhances students understanding, enabling them to interpret and apply it in a different context than in which it was learned" (cited in Rehmani, 2003, p. 7).

Gipps (1996) adds objective and reliable assessment transcends beyond superficial practices and it instills critical thinking and analytical approaches among learner (p. 251). However, Hays (1987) argues that students resort to the practices of rote-learning and memorization when the content of the prescribed syllabus is

beyond cognitive level and understanding. Contrary to it, this study proposes that by modifying items of assessment from the vantage point of Bloom's Taxonomy, overall teaching-learning practices in the classroom can be reformed and revolutionized. The designed questions may include generic low- and high-level verbs to add lower and higher order of learning. Generally, verbs such as to define, duplicate, list memorize, repeat, state, remember, recite are for remembering; classify, describe, discuss, explain, identify, locate, recognize, report, select, translate, paraphrase for understanding; execute, implement, solve, use, demonstrate, interpret, operate, schedule, sketch, calculate, determine, apply for applying, differentiate, organize, relate, compare, contrast, distinguish, examine, experiment, test, categorize, derive, model for analyzing; appraise, argue, defend, judge, select, support value, critique, weigh, check, hypothesize, critique, improve for evaluating and design, assemble, construct, conjecture, develop, formulate, author investigate, plan, produce, devise, invent for creating (Anderson et al., 2001; Bloom, 1956). Thus, the systematic and gradual inclusion of all domains will require inclusive teaching on the part of faculty and composite and comprehensive study and preparation by students.

Conclusion and Recommendations

It is found that the prevailing assessment practices by BISE of Sindh province are fallacious as they include the questions from the lower domains of learning, whereas the higher domains remain less focused. The data show all boards of Sindh Province have exhausted 74% for the lower domains whereas only 26% is employed to investigate and cultivate higher domains of learning. Its impact is likely to permeate and govern the teaching pedagogy and practices in the classroom. The teachers would teach by keeping the same questions in view and so will be the priorities of learners. As a result, memorization and parrot-learning would dominate the class and the critical skills of students would remain less sharpened. Contrary to given practices, if the question papers designed for the assessment include the systematic and scientific proportion of both lower and higher domains, the pedagogical practices of teachers and learning prioritizes of students will altogether be reformed and revolutionized positively.

The study recommends that:
- The assessment system should be developed with more systematic and scientific grounds with clear objectives and measurable goals.

- It should have defined rubrics with stipulated areas and a rationalized number of items for assessment.

- The papers must be free of convergence and divergence cues and superfluous repetition.

- Most importantly the papers must be inclusive of all domains with a special focus on the higher domains of 'analyzing' 'evaluating' and 'creating'.

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